Principles of Economics I
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Problem Set 4 (Due October 7, 2022)

1. Consider the labor discipline model covered in class. According to the model, workers supply (extra) effort to make sure that they can keep a job that generates an employment rent. Explain in a few words how the following factors affect employment rent.

   (a) A part of the unemployment compensation in Finland is calculated as a percentage of your salary over a fixed period of last employment (say last two years). What are the effects on employment rent if the percentage is increased from 45% to 50% for full time workers? Does your answer depend on the length of your last employment spell?

   (b) A new training program aimed at moving you to a more specialized expert task within your company.

   (c) A new training program teaching you valuable skills portable between different companies.

   (d) Increasing the number of university slots in your specialization, i.e. increase in enrolment in law school for lawyers, in medical school for medical doctors etc.)?

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2. Classify the following expenditures in a firm as fixed costs or variable costs. The answers that you give may depend on the time horizon that you have in mind.

   (a) Buying land to build a factory for the production of your good.

   (b) Hiring famous actors to promote you new mobile game.

   (c) Upgrading the IT-system in the headquarters of your company.

   (d) Hiring waiters and waitresses at a beachfront restaurant on contracts with fixed working hours versus hiring on flexible hourly contracts.

3. In this exercise, you are invited to think a bit more about the price elasticity of demand.

(a) Consider the demand for electricity in any given month. Is this likely to be elastic or inelastic?

(b) What about the demand for electricity over a longer horizon (over a span of ten years). Explain any differences that you may have in your first two answers.

(c) What happens to the elasticity of pulled oats as more meat-like vegetarian products enter the market?

(d) Fair trade coffee versus the mainstream coffee brands. Compare the price differences at your local supermarket to the premium that fair trade producers get for their beans. What do you conclude about the demand elasticities?

(e) In Figure 7.19 of the textbook, the reported price elasticity of Snacks and candy is 0.295 from a study based on demand observations in scanner data. On p.302 and in the lecture notes, we have seen that at profit maximizing prices, the markup (a number between 0 and 1) should be equal to the inverse of the elasticity. Stores can set their prices. Should we conclude that they are not profit-maximizing or can you give other explanations?

4. This exercise lets you construct demand curves for different populations of consumers. Imagine that each consumer chooses whether to buy the product or not and her willingness to pay (wtp) is denoted by v.

(a) There are 100 consumers. The consumers are anonymous, but we use numbers for their names. Consumer 1 has wtp $v_1 = 198$, consumer 2 has wtp $v_2 = 196$, and in general consumer i has wtp $200 - 2i$ so that $v_{100} = 0$. Construct the demand curve, i.e. for each Q, find price (or prices) P such that the number of consumers with wtp at least P is Q.

(b) Compare the demand curve you obtained in part a. to the continuous demand curve for region A given by $P_A(Q) = 200 - 2Q$ in the (Q, P) -coordinate system. Compute the marginal revenue curve for $P_A(Q)$.

(c) Consider the demand curve for region B also of size 100 given by $P_B(Q) = 150 - Q$ if $Q \leq 100$ and $P(Q) = 0$ for $Q > 100$. Notice that the willingnesses to pay in this case are more concentrated in this population than in part a. but the average wtp is the same. Compute the marginal revenue curve for region B.

(d) Suppose regions A and B become economically integrated so that the demand at any price P consists of all individuals in A or B willing to pay at least P for the product. Compute $P_{A+B}(Q)$ for this case. What happens to the slope of the demand curve at $Q = 25$ and $Q = 175$?

5. Consider a market where a monopolist travel agent sells bus tickets to away games for the fans of a football team in champions league. The market clearing price for Q fans is given by $100 - \frac{1}{100}Q$ per ticket. Suppose that the cost of hiring a bus, driver and gasoline is EUR 1000 per bus and each bus seats 50 fans.

   (a) Sketch the average cost curve for $Q \leq 500$.

   (b) What does the marginal cost curve look like? Compute also the marginal revenue.

   (c) Is it true that MR $=$ MC at the profit maximizing quantity of this problem?

   (d) What is the profit maximizing number of buses?